BAREILLY INTERNATIONAL UNIVERSITY,BAREILLY

Title: Effectiveness of Sensitization Programme: infection prevention and control among patient with tuberculosis

By

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Protocol of Thesis to be submitted to the Bareilly International University, Bareilly for the partial fulfilment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

(*Nursing*)

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Faculty of Nursing

(Affiliated to Bareilly International University, Bareilly)

DECLARATION BY THE CANDIDATE

I hereby declare that this thesis protocol entitled "Effectiveness of Sensitization Programme: infection prevention and control among patient with tuberculosis." will be a bonafide and genuine research work carried out by me under the supervision of **Dr. Prema P** *for partial fulfilment* of the regulations for the Award of the degree of **Doctor of Philosophy** in **Nursing.**

Date:

Signature of the Candidate

Mr. Shiv Shankar Tyagi

Certificate by the Supervisor

Faculty of Nursing

(Affiliated to Bareilly International University, Bareilly)

This is to certify that the facilities for the research work entitled **"Tuberculosis infection prevention and control : Effectiveness of Sensitization Programme among patient with tuberculosis."** allotted to **Mr. Shiv Shankar Tyagi** under my direct supervision and guidance do exist in Faculty of Nursing, Bareilly.

I will ensure the authenticity of the thesis protocol topic and research methodology which conforms to the standards of Bareilly International University.

Supervisor

Signature
Name with Degree: Dr. Prema. P
Faculty of Nursing

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INTRODUCTION

"Whenever we attain a higher vision, the lower vision disappears of itself"

Swami vivekananda

Tuberculosis is an infectious disease caused by mycobacterium tuberculosis. It affects the lungs and other organs. The disease is spread through the air when people who are sick with pulmonary TB expel the bacteria. Only a small proportion of people, approximately 10% infected with M tuberculosis will develop clinical TB during their lifetime[1].

One of the leading causes of preventable health in adults is Tuberculosis worldwide. TB case and death are more common in middle and low income population. Effective control measure in health setting can reduce3 the risk of TB transmission[2]. The control measures for tuberculosis are necessary to reduce the morbidity and mortality rates disease and to prevent the transmission of TB by airborne droplets[3].

WHO recognised that the knowledge, practice and attitude survey regarding tuberculosis has to included in the advocacy, communication and social mobilisation strategy. India is one among the high burden countries identified by WHO and one third of world TB burden holds by India[4].

Tuberculosis is a major public health concern. Despite the efforts of World health organisation and various national programmes, the global burden of tuberculosis is still alarming. Most productive age group is affected by tuberculosis. In India, 70% of all patients

are aged between 15 and 54 years and 2/3 rd of male are affected with tuberculosis. Tuberculosis control efforts are still not impressive and not sufficient and it is acknowledged for the same. TB infection control goal is to minimise the risk of Tb transmission within the population by the combination of different measures. The foundation of such infection control is early and rapid diagnosis, and proper management of TB patients[4].

Every year 10 million people are affected world wid. 1.6 million people are dying from the disease and more than 4000 people die every day from this disease though it's a curable disease. Each year 3.6 million people with tuberculosis go undiagnosed and untreated. Major effort are needed to close this gap and nurses on the front lines play an important role in detecting, diagnosing and treating these patients[5].

On 22 march 2019, The international council for nurses agreed on the world tuberculosis day that , the theme of this year for world TB day is It is time to end TB. The key commitments of the head holds the state, ministers, health professionals, affected communities, as well as community and local level leaders is to bring the attention to TB .Nurses spend most time with the patients. So when they empowered with knowledge regarding TB , it will become benefit to all. Definitely it leads to good adherence, good outcomes and a healthy community for all. TB free world in 2030, this goal will be reached through the goals of International council for nurses[5].

According to state-level estimates of the burden of disease published in a new report put together by the Indian Council of Medical Research, the Public Health Foundation of India, the Institute for Health Metrics and Evaluation, and the Ministry of Health and Family Welfare, In 2016, tuberculosis (TB) killed more people per 100,000 in Uttar Pradesh (58) than any other state in India[6]

Sensitization programme is a non-associative learning process in which repeated education programme results in the progressive amplification of a response. Sensitization often is characterized by an enhancement of response to a whole class of stimuli in addition to the one that is repeated[7].

The impact of simple education intervention such as health education, lecture in order to improve the knowledge and awareness among the public regarding tuberculosis is considered necessary. The education module could potentially replicated in all the areas such as community, school and colleges specially in tuberculosis endemic areas[4].

The sensitization programme is carried out based on structured package of components which include brief lectures or discussion on Tuberculosis, wide variety of audio visual aids such as short documentary movie and flipcharts and art forms[8].

Hence this study will be conducted to assess the effectiveness of sensitization programme on infection prevention and control among patients with tuberculosis.

REVIEW OF LITERATURE

Medhavi Agarwal(2018) conducted a cross sectional study on Impact of sensitization workshop on knowledge regarding tuberculosis among graduate students of rural areas of Bareilly district. The purpose of the study to improve the knowledge and awareness about tuberculosis among students. Multi stage random sampling was used to select students in the rural area of bareilly. A predesigned and pre test questionnaire was used to collect the pre workshop and post workshop data. The questions covered the knowledge of students about diagnosis, prevention and treatment aspects of tuberculosis. A sensitization programme was conducted for a day covering all the aspects of tuberculosis. The knowledge of the graduate students has been enhanced after the sensitization programme. This study corroborates these

findings in the sense that an effort is needed to improve the knowledge of students regarding tuberculosis[4].

Y A Kuyinu(2016) conducted a cross sectional study regarding tuberculosis infection control measures in health care facilities. The study was conducted to assess the knowledge of health care facilities regarding availability and implementation of tuberculosis infection control plan. Twenty tuberculosis care facilities were included in the study. The study revealed that the health care facilities were not implementing tuberculosis infection control plan adequately. Among the twenty health care facilities, twelve health care facility has consistently provided masks to patients who were coughing. . Weak managerial support, poor funding, under staffing and lack of space are found barriers . A multi prolonged approach is required to address the identified barriers for the implementation of tuberculosis infection control guideline[3].

N Gladdys Kigozi (2015) conducted a cross sectional study on tuberculosis knowledge, attitude and practices of patients at primary health care facilities. Health education is necessary to improve the knowledge of patients regarding tuberculosis. Three hundred and seventy four patients were selected for the study, who were visiting the primary health care facility. The study was conducted in the Mangaung Metropolitan of the free state province in south Africa. A questionnaire is administered and the questionnaire include following sub headings such as socio demographic information, knowledge about Tuberculosis, attitude towards tuberculosis and infection control practices. Nine items such as tuberculosis etiologic, transmission, susceptibility and treatment were included in the study. Their understanding regarding susceptibility to tuberculosis was good, half of them are strongly agreed that tuberculosis is a severe disease and two in every patients strongly agreed that infection control at the primary health care facility is essential. The study findings highlight the need for health education efforts at primary health care facilities[9].

Ye Minn Hum (2018) conducted are retrospective study regarding delay in treatment initiation and treatment outcomes among adult patients with multi drug resistant tuberculosis at Yangon regional Tuberculosis centre, Myanmar. The objective of the study were the determinants of delay in treatment initiation after multi drug resistant diagnosis and to explore the effects of treatment delay on disease infectivity, severity, treatment adherence and treatment outcomes. This study reviewed three thirty MDR TB treatment cards of patients who were enrolled. This study revealed that the there was poor treatment outcome because delay in the initiation of treatment. This study emphasise that the need for immediate interventions to reduce treatment delay and improve treatment outcomes, including scaling up diagnostic capacity with Xpert MTB/RIF at township level, expansion of decentralised MDR treatment initiation centres. Ensuring a productive health workforce comprising health care personnel. And thus health education and treatment adherence counselling is also necessary for patients and family members[10].

Tadle Teshome Woima(2017) conducted a cross sectional study on the prevalence and factors associated for anti tuberculosis treatment non adherence among pulmonary tuberculosis patients in public health facilities in south Ethiopia. Two hundred and sixty one pulmonary tuberculosis patients who registered before six months were selected by simple random sampling. Face to face interview was conducted to solicit the socio demographic and economic factor, treatment factors, behavioural factors, and patient knowledge towards tuberculosis and treatment. The result shows that the prevalence of anti tuberculosis non adherence was 24.5%.This qualitative study also revealed that distance, lack of awareness about importance of treatment completion and cost of transportation was the major barrier for adherence. Knowledge, distance not decentralising of DOTS service, health information at every visit and cost of medication other than anti tuberculosis were the barriers for

tuberculosis treatment adherence. Priority should be given regarding decentralisation of DOTS to lower the level of health facility structure[11].

AIM

To assess the effectiveness of sensitization programme among Tuberculosis patient regarding TB infection prevention and control measures.

OBJECTIVES

1.To assess the knowledge , attitude and practice of TB patient regarding tuberculosis infection prevention and control measures in experimental and control group.

2.To assess the effectiveness of sensitization programme regarding tuberculosis infection prevention and control measure among TB patient in experimental group.

3.To compare the post test knowledge,attitute and practice regarding tuberculosis infection prevention and control measures between experimental and control group

4.To find out the significant relation between the knowledge attitude and practice regarding tuberculosis infection prevention and control measure in experimental group

5. To associate the pre test knowledge , attitude and practice score regarding tuberculosis infection prevention and control measures among TB patient in experimental group. with their selected demographic variable

2. MATERIAL & METHOD

1. Study Design

It will be conducted as a non randomised control group study at DOTS Centre, Rohilkhand Medical college and Hospital, Bareilly & Varun Arjun Medical College and Rohilkhand Hospital, Shahjahanpur . Ethical committee clearance will be sought before commencing the study. Written informed consent will be taken from all the patient with Tuberculosis included in the study.

2. Study duration.

The period of the study will be 12 months ( ) which will be used for the development of study tool, collection of data, evaluation and presentation of finding.

3. Sample size and Sampling technique

Complete enumeration method and purposive sampling will be used as a sampling technique and who will fulfil the inclusion criteria will be enrolled for the study

4. Study Population

Tuberculosis patient registered with dots Centre in Rohilkhand medical college & Hospital(Experimental group) Bareilly District and Varun arjun Medical college & Rohilkhand Hospital (Control Group) Banthara, Shahjahanpur district

5. Inclusion Criteria

a. Adult Tuberculosis Patient willing to give informed consent

b. All the Tuberculosis patient registered in dots centre of Rohilkhand medical college and hospital & Varun Arjun Medical College

6. Exclusion Criteria

a. Tuberculosis patient with other complication.

b. Tuberculosis patient those are not resident of Uttar Pradesh(India).

7. Data collection technique and Tools

A structured interview schedule, attitude scale and check list will be used to assess the knowledge , attitude and practice before and after sensitization programme regarding tuberculosis infection prevention and control measures

SECTION A: DEMOGRAPHIC DATA:

Demographic Variables of patient with Tuberculosis	
Variable	**Distribution**
1.Age	a) 18-21 b) 21-25 c) 26-30 d) 31-35 e) ≥35
2. Sex	a) Male b) Female c) Transgender
3.Professional Qualification	a) Diploma b) Degree c) Post Graduation d) Doctorate e) Illiterate
4. Source of Information	a) mass media b) health centers and health care workers c) family members

	d) other
5. Marital Status	a) Married b) Single
6.type of Tuberculosis	a) Primary T.B. b) MDR TB c) XDR TB d) Latent TB

SECTION B: Data collection tools

a. Structured Knowledge interview regarding tuberculosis infection prevention and control will be used to asses the pre test and post test knowledge from experimental group and control group regarding general tuberculosis facts and tuberculosis infection prevention and control
b. Attitude rating scale, four point scale ranging from strongly agree(4), agree(3), disagree(2), strongly disagree(1). Will be used in this study regarding tuberculosis infection prevention and control
c. Practice check list (3 point likert scale ranging from always(2), sometimes(1), never (0)regarding tuberculosis infection prevention and control) will be followed.

Sensitization Programme Regarding Tuberculosis Infection Prevention And Control(Module based on World Health Organization guideline)

Part A: Tuberculosis general fact

1. Introduction to tuberculosis
2. Causes of tuberculosis
3. Sign and Symptoms Of Tuberculosis
4. Tuberculosis Treatment
5. Transmission of tuberculosis

Part B: Tuberculosis infection prevention and control

1. Prevention of Tuberculosis
2. Cough hygiene
3. Sputum disposal methods
4. Isolation
5. Treatment adherence

Data Evaluation

Suitable statistical evaluation will be done using SPSS version 23. The result will be displayed with the help of table and graphs

References

1.F. Dessisa, 2018, Risk factors for the occurrence of multidrug tuberculosis. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-018-5371-3

2. Paul R allyn, January 2018, Guide to infection control in the hospital. https://www.isid.org/wp-content/uploads/2018/.../ISID_InfectionGuide_Chapter26.pdf

3.Kyuinu YA, march2015, Tuberculosis infection control measures in health care facilities offering tb services in Ikeja local government area, Lagos, South West, Nigeria. https://www.ncbi.nlm.nih.gov/pubmed/26980191

4. Medhavi Agarwal, May 2018, Impact of sensitization workshop on knowledge regarding tuberculosis. https://www.researchgate.net/.../325427779_Impact_of_sensitization_workshop_on_kno...

5. International council for nurses, 22 march 2019, It's time to end TB | ICN - International Council of Nurses. https://www.icn.ch/news/its-time-end-tb

6. Shreya Shah, November 14, 2017 ,In 2016, Highest Death Rate Of Tuberculosis In Uttar Pradesh. https://factchecker.in/in-2016-highest-death-rate-of-tuberculosis-in-uttar-pradesh/

7. Wikipedia, 29 December 2018, Sensitization. https://en.wikipedia.org/wiki/Sensitization

8. National institute for research in tuberculosis, 2017, Training – MedIND. medind.nic.in/nac/t05/i1/nact05i1p55.pdf

9. Kigozi NG, Heunis JC, Engelbrecht MC, van Rensburg AP, van Rensburg HD. Tuberculosis knowledge, attitudes and practices of patients at primary health care facilities in

a South African metropolitan: research towards improved health education. BMC public health. 2017 Dec;17(1):795.

10. Htun YM, Khaing TM, Aung NM, Yin Y, Myint Z, Aung ST, Soonthornworasiri N, Silachamroon U, Kasetjaroen Y, Kaewkungwal J. Delay in treatment initiation and treatment outcomes among adult patients with multidrug-resistant tuberculosis at Yangon Regional Tuberculosis Centre, Myanmar: A retrospective study. PloS one. 2018 Dec 31;13(12):e0209932.

11. TT Woimo, Mar 20, 2017, The prevalence and factors associated for anti-tuberculosis treatment. https://www.ncbi.nlm.nih.gov/pubmed/28320351

ANNEXURE – B

LETTER SEEKING EXPERT'S OPINION AND SUGGESTION FOR THE CONTENT VALIDATY OF THE TOOL

From,

_____

_____

_____

_____

To,

_____

_____

Respected Sir/Madam

Subject:- Request for expert opinion and suggestion to establish content validity of the research tool.

I_____ Phd scholar, Faculty of Nursing have undertaken a research project work on

_____

_____

_____

_____Which to be submitted to Bareilly International University, Bareilly for Partial fulfillment of Phd in Nursing.

I humbly request you to go through the content and give your valuable suggestions and opinion.

Thanking you

Yours Obediently

_____

ANNEXURE – C

CRITERIA PRACTICE SCALE FOR EVALUATION OF TOOL

Dear Sir/Madam

Kindly go through the tool content; give opinion in the columns given in the criteria table against to each question. If the item is not relevant, please give your valuable suggestion in the column.

I team No:	Not Relevant	Relevant to some extent	Relevant	Remark
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SECTION B:- Knowledge Questionnaire

I team No:	Not Relevant	Relevant to some extent	Relevant	Remark
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36				
37				
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39				
40				

General Comments_____

_____

Date: **Signature of Experts**

Place: **Name of Designation**

SECTION C :- Perception Scale

I team No:	Not Relevant	Relevant to some extent	Relevant	Remark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

General Comments_____

_____

Date: **Signature of Experts**

Place: **Name of Designation**

CONSENT FORM

Dear Participant,

I _____ Phd scholar, as a part of partial fulfillment of the requirement for the degree of Phd in Nursing , I am interested to conduct a study on the topic " _____

_____

_____"

I request your kind Co-operation and active participation. I am sure that the information provided will be kept confidential and is used for the study purpose only. Kindly give your consent for the same.

Thanking You

Yours Faithfully

_____

( )

I am willing to participate in the study and I am aware that the information provided will be kept confidential and is used for the study purpose only.

Place:

Signature of Participant

LETTER REQUESTING PERMISSION TO CONDUCT MAINRESEARCH STUDY:-

From,

_____

_____

_____

To,

_____

_____

Subject:-Requesting permission to conduct main study.

Respected Sir/Madam

I_____ Phd scholar, Faculty of Nursing have undertaken a research project work on

_____

_____

_____

_____Which to be submitted to Bareilly International University, Bareilly for Partial fulfillment of Phd in Nursing.

This study is approved by the ethical committee of Bareilly international university. Regarding this main study, I am is in need of your esteemed help and co-operation as i am is interested in conducting a study in ----------

I request you to kindly permit me to conduct the proposed study and provide me the necessary facilities. I will furnish future details of the study, if required personally. Please do the needful. I assure that this study will not make any harmful effects on the subjects.

Thanking you in anticipation

Date:
Place:

Yours Faithfully

PRINCIPAL

सहमति पत्र

प्रिय प्रतिभागी,

I _____ पीएचडी विद्वान, आंशिक पूर्ति के एक भाग के रूप में नर्सिंग में पीएचडी की डिग्री के लिए आवश्यकता, मैं इस विषय पर एक अध्ययन करने के लिए इच्छुक हूं

“_____
_____
_____
_____"

मैं आपकी तरह के सहयोग और सक्रिय भागीदारी का अनुरोध करता हूं। मुझे यकीन है कि प्रदान की गई जानकारी को गोपनीय रखा जाएगा और इसका उपयोग केवल अध्ययन के उद्देश्य से किया जाएगा। की कृपा करे

उसी के लिए अपनी सहमति दें।

आपको धन्यवाद

आपका आभारी

_____

()

मैं अध्ययन में भाग लेने के लिए तैयार हूं और मुझे जानकारी है कि उपलब्ध कराई गई जानकारी है

गोपनीय रखा जाएगा और केवल अध्ययन उद्देश्य के लिए उपयोग किया जाता है।

जगह:

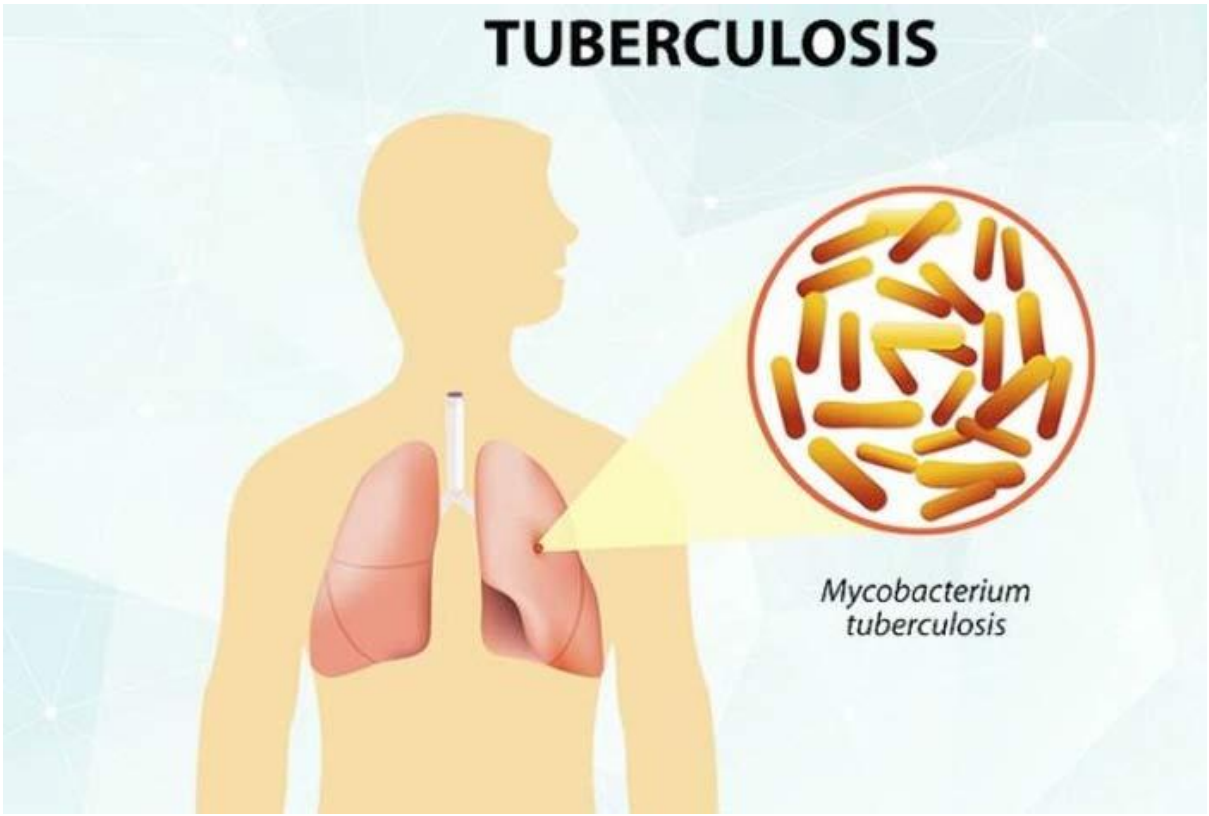
प्रतिभागी का हस्ताक्षर

MODULE

SENSITIZATION PROGRAMME

ON

TUBERCULOSIS INFECTION PREVENTION AND CONTROL PLAN



Supervisor

Dr. Prema P

Ph D Guide

BIU

Prepared by

Mr. Shiv Shankar Tyagi

Ph D Scholar

BIU

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Section-1 General Fact About Tuberculosis

- Introduction, incidence & risk factor
- Pathogenesis, causes and sign & symptoms
- Treatment, prevention, complication & prognosis
- Advocacy & counseling

INTRODUCTION

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain. Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and TB disease. If not treated properly, TB disease can be fatal

How TB Spreads

TB bacteria are spread through the air from one person to another. The TB bacteria are put into the air when a person with TB disease of the lungs or throat coughs, speaks, or sings. People nearby may breathe in these bacteria and become infected.

TB is NOT spread by

- shaking someone's hand
- sharing food or drink
- touching bed linens or toilet seats
- sharing toothbrushes
- kissing

When a person breathes in TB bacteria, the bacteria can settle in the lungs and begin to grow. From there, they can move through the blood to other parts of the body, such as the kidney, spine, and brain.

TB disease in the lungs or throat can be infectious. This means that the bacteria can be spread to other people. TB in other parts of the body, such as the kidney or spine, is usually not infectious.

People with TB disease are most likely to spread it to people they spend time with every day. This includes family members, friends, and coworkers or schoolmates.

Latent TB Infection and TB Disease

Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection and TB disease.

Latent TB Infection

TB bacteria can live in the body without making you sick. This is called latent TB infection. In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria

to stop them from growing. People with latent TB infection:

- Have no symptoms
- Don't feel sick
- Can't spread TB bacteria to others
- Usually have a positive TB skin test reaction or positive TB blood test
- May develop TB disease if they do not receive treatment for latent TB infection

Many people who have latent TB infection never develop TB disease. In these people, the TB bacteria remain inactive for a lifetime without causing disease. But in other people, especially people who have a weak immune system, the bacteria become active, multiply, and cause TB disease.

TB Disease

TB bacteria become active if the immune system can't stop them from growing. When TB bacteria are active (multiplying in your body), this is called TB disease. People with TB disease are sick. They may also be able to spread the bacteria to people they spend time with every day.

Many people who have latent TB infection never develop TB disease. Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria. Other people may get sick years later when their immune system becomes weak for another reason.

For people whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is much higher than for people with normal immune systems.

The Difference between Latent TB Infection (LTBI) and TB Disease

The Difference between Latent TB Infection (LTBI) and TB Disease	
A Person with Latent TB Infection	A Person with TB Disease

• Has no symptoms	• Has symptoms that may include
	  ○ a bad cough that lasts 3 weeks or longer
	  ○ pain in the chest
	  ○ coughing up blood or sputum
	  ○ weakness or fatigue
	  ○ weight loss
	  ○ no appetite
	  ○ chills
	  ○ fever
	  ○ sweating at night

• Does not feel sick	• Usually feels sick
• Cannot spread TB bacteria to others	• May spread TB bacteria to others
• Usually has a skin test or blood test result indicating TB infection	• Usually has a skin test or blood test result indicating TB infection

The Difference between Latent TB Infection (LTBI) and TB Disease	
A Person with Latent TB Infection	A Person with TB Disease
• Has a normal chest x-ray and a negative sputum smear	• May have an abnormal chest x-ray, or positive sputum smear or culture
• Needs treatment for latent TB infection to prevent TB disease	• Needs treatment to treat TB disease

Signs & Symptoms

Symptoms of TB disease depend on where in the body the TB bacteria are growing. TB bacteria usually grow in the lungs (pulmonary TB). TB disease in the lungs may cause symptoms such as

- a bad cough that lasts 3 weeks or longer
- pain in the chest
- coughing up blood or sputum (phlegm from deep inside the lungs)

Other symptoms of TB disease are

- weakness or fatigue
- weight loss
- no appetite
- chills
- fever
- sweating at night

Symptoms of TB disease in other parts of the body depend on the area affected.

People who have latent TB infection do not feel sick, do not have any symptoms, and cannot spread TB to others.

TB Risk Factors

Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria. Other people may get sick years later, when their immune system becomes weak for another reason.

Overall, about 5 to 10% of infected persons who do not receive treatment for latent TB infection will develop TB disease at some time in their lives. For persons whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is much higher than for persons with normal immune systems.

Generally, persons at high risk for developing TB disease fall into two categories:

- Persons who have been recently infected with TB bacteria

- Persons with medical conditions that weaken the immune system

Persons who have been Recently Infected with TB Bacteria

This includes:

- Close contacts of a person with infectious TB disease
- Persons who have immigrated from areas of the world with high rates of TB
- Children less than 5 years of age who have a positive TB test
- Groups with high rates of TB transmission, such as homeless persons, injection drug users, and persons with HIV infection
- Persons who work or reside with people who are at high risk for TB in facilities or institutions such as hospitals, homeless shelters, correctional facilities, nursing homes, and residential homes for those with HIV

Persons with Medical Conditions that Weaken the Immune System

Babies and young children often have weak immune systems. Other people can have weak immune systems, too, especially people with any of these conditions:

- HIV infection (the virus that causes AIDS)
- Substance abuse
- Silicosis
- Diabetes mellitus
- Severe kidney disease
- Low body weight
- Organ transplants
- Head and neck cancer
- Medical treatments such as corticosteroids or organ transplant
- Specialized treatment for rheumatoid arthritis or Crohn’s disease

Exposure to TB

What to Do If You Have Been Exposed To TB

You may have been exposed to TB bacteria if you spent time near someone with TB disease. The TB bacteria are put into the air when a person with active TB disease of the lungs or throat coughs, sneezes, speaks, or sings. You cannot get TB from

- Clothes
- Drinking glass
- Eating utensils
- Handshake
- Toilet
- Other surfaces

If you think you have been exposed to someone with TB disease, you should contact your doctor or local health department about getting a TB skin test or a special TB blood test. Be sure to tell the doctor or nurse when you spent time with the person who has TB disease.

It is important to know that a person who is exposed to TB bacteria is not able to spread the bacteria to other people right away. Only persons with active TB disease can spread TB bacteria to others. Before you would be able to spread TB to others, you would have to breathe in TB bacteria and become infected. Then the active bacteria would have to multiply in your body and cause active TB disease. At this point, you could possibly spread TB bacteria to others. People with TB disease are most likely to

spread the bacteria to people they spend time with every day, such as family members, friends, coworkers, or schoolmates.

Some people develop TB disease soon (within weeks) after becoming infected, before their immune system can fight the TB bacteria. Other people may get sick years later, when their immune system becomes weak for another reason. Many people with TB infection never develop TB disease.

TB Prevention

Preventing Latent TB Infection from Progressing to TB Disease

Many people who have latent TB infection never develop TB disease. But some people who have latent TB infection are more likely to develop TB disease than others. Those at high risk for developing TB disease include:

- People with HIV infection
- People who became infected with TB bacteria in the last 2 years
- Babies and young children
- People who inject illegal drugs
- People who are sick with other diseases that weaken the immune system
- Elderly people
- People who were not treated correctly for TB in the past

If you have latent TB infection and you are in one of these high-risk groups, you should take medicine to keep from developing TB disease.

There are several treatment options for latent TB infection. You and your health care provider must decide which treatment is best for you. If you take your medicine as instructed, it can keep you from developing TB disease. Because there are less bacteria, treatment for latent TB infection is much easier than treatment for TB disease. A person with TB disease has a large amount of TB bacteria in the body. Several drugs are needed to treat TB disease.

Preventing Exposure to TB Disease While Traveling Abroad

In many countries, TB is much more common than in the United States. Travelers should avoid close contact or prolonged time with known TB patients in crowded, enclosed environments (for example, clinics, hospitals, prisons, or homeless shelters).

Although multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB are occurring globally, they are still rare. HIV-infected travelers are at greatest risk if they come in contact with a person with MDR or XDR TB.

Air travel itself carries a relatively low risk of infection with TB of any kind. Travelers who will be working in clinics, hospitals, or other health care settings where TB patients are likely to be encountered should consult infection control or occupational health experts. They should ask about administrative and environmental procedures for preventing exposure to TB. Once those procedures are implemented, additional measures could include using personal respiratory protective devices.

Travelers who anticipate possible prolonged exposure to people with TB (for example, those who expect to come in contact routinely with clinic, hospital, prison, or homeless shelter populations) should have a TB skin test or a TB blood test before leaving the United States. If the test reaction is negative, they should have a repeat test 8 to 10 weeks after returning to the United States. Additionally, annual testing may be recommended for those who anticipate repeated or prolonged exposure or an extended stay over a period of years. Because people with HIV infection are more likely to have an impaired response to TB tests, travelers who are HIV positive should tell their physicians about their HIV infection status

Vaccines

TB Vaccine (BCG)

Bacille Calmette-Guérin (BCG) is a vaccine for tuberculosis (TB) disease. This vaccine is not widely used in the United States, but it is often given to infants and small children in other countries where TB is common. BCG does not always protect people from getting TB.

BCG Recommendations

In the United States, BCG should be considered for only very select people who meet specific criteria and in consultation with a TB expert. Health care providers who are considering BCG vaccination for their patients are encouraged to discuss this intervention with the TB control program in their area.

Children

BCG vaccination should only be considered for children who have a negative TB test and who are continually exposed, and cannot be separated from adults who

- Are untreated or ineffectively treated for TB disease, and the child cannot be given long-term primary preventive treatment for TB infection; or
- Have TB disease caused by strains resistant to isoniazid and rifampin**.**

Health Care Workers

BCG vaccination of health care workers should be considered on an individual basis in settings in which

- A high percentage of TB patients are infected with TB strains resistant to both isoniazid and rifampin;
- There is ongoing transmission of drug-resistant TB strains to health care workers and subsequent infection is likely; or
- Comprehensive TB infection-control precautions have been implemented, but have not been successful.

Health care workers considered for BCG vaccination should be counseled regarding the risks and benefits associated with both BCG vaccination and treatment of latent TB infection.

Testing for TB in BCG-Vaccinated People

Many people born outside of the United States have been BCG-vaccinated.

People who were previously vaccinated with BCG may receive a TB skin test to test for TB infection. Vaccination with BCG may cause a positive reaction to a TB skin test. A positive reaction to a TB skin test may be due to the BCG vaccine itself or due to infection with TB bacteria.

TB blood tests (IGRAs), unlike the TB skin test, are not affected by prior BCG vaccination and are not expected to give a false-positive result in people who have received BCG.

For children under the age of five, the TB skin test is preferred over TB blood tests.

A positive TB skin test or TB blood test only tells that a person has been infected with TB bacteria. It does not tell whether the person has latent TB infection or has progressed to TB disease. Other tests, such as a chest x-ray and a sample of sputum, are needed to see whether the person has TB disease.

TB and HIV Coinfection

Tuberculosis is a serious health threat, especially for people living with HIV. People living with HIV are more likely than others to become sick with TB. Worldwide, TB is one of the leading causes of death among people living with HIV.

Without treatment, as with other opportunistic infections, HIV and TB can work together to shorten lifespan.

- Someone with untreated latent TB infection and HIV infection is **much more** likely to develop TB disease during his or her lifetime than someone without HIV infection.
- Among people with latent TB infection, HIV infection is the strongest known risk factor for progressing to TB disease.
- A person who has both HIV infection and TB disease has an AIDS-defining condition.

People infected with HIV who also have either latent TB infection or TB disease can be effectively treated. The first step is to ensure that people living with HIV are tested for TB infection. If found to have TB infection, further tests are needed to rule out TB disease. The next step is to start treatment for latent TB infection or TB disease based on test results**.**

Treatment

Untreated latent TB infection can quickly progress to TB disease in people living with HIV since the immune system is already weakened. And without treatment, TB disease can progress from sickness to death.

Fortunately, there are a number of treatment options for people living with HIV who also have either latent TB infection or TB disease**.**

PART -2 Education on tuberculosis infection Prevention and control

1. Cough hygiene
    a. What is cough hygiene
    b. How to do cough hygiene
2. Sputum disposal methods
3. Isolation
4. Treatment adherence

TB Prevention - Precautions, vaccine, masks

Global campaigns help with TB prevention

TB prevention consists of several main parts.
Stopping the transmission of TB from one adult to another

Firstly there is a need to stop the transmission of TB from one adult to another.
This is done through firstly, identifying people with active TB, and then curing them through the provision of drug treatment. With proper TB treatment someone with TB will very quickly not be infectious and so can no longer spread TB to others.

If someone is not on treatment, then precautions such as cough etiquette, must be taken to prevent TB spreading from one adult to another.
Anything which increases the number of people infected by each infectious person, such as ineffective treatment because of drug resistant TB, reduces the overall effect of the main TB prevention efforts. The presence of TB and HIV infection together also increases the number of people infected by each infectious person. As a result it is then more likely that globally the number of people developing active TB will increase rather than decrease.

Other TB prevention activities

There are several other TB prevention activities. This includes preventing people with latent TB from developing active, and infectious, TB disease.
TB infection control which means preventing the transmission of TB in such settings as hospitals & prisons.
The pasteurization of milk also helps to prevent humans from getting bovine TB.

There is a vaccine for TB, but it makes only a small contribution to TB prevention. It does little to interrupt the transmission of TB among adults.

TB PRECAUTIONS, COUGH ETIQUETTE

TB is caused when a person breathes in TB bacteria that are in the air. So it is important that people with TB, who are not on effective treatment, do not release TB bacteria into the air when they cough.
Cough etiquette means that if you have TB, or you might have TB, then when you cough you should cover your mouth and nose with a tissue. You should put your used tissue in a bin. If you don't have a tissue then you should cough or sneeze into your upper sleeve or elbow. You should not cough into your hands. After you have coughed you should wash your hands.[1]

TB PREVENTION - THE BCG VACCINE

The vaccine called Bacillus Calmette-Guerin (BCG) was first developed in the 1920s. It is one of the most widely used of all current vaccines, and it reaches more than 80% of all new born children and infants in countries where it is part of the national childhood immunization programme.[2] However, it is also one of the most variable vaccines in routine use.
The BCG vaccine has been shown to provide children with excellent protection against the disseminated forms of TB. However protection against pulmonary TB in adults is variable. Since most transmission originates from adult cases of pulmonary TB, the BCG vaccine is generally used to protect children, rather than to interrupt transmission among adults.
The BCG vaccine will often result in the person vaccinated having a positive result to a TB skin test.

TB TREATMENT AS TB PREVENTION

TB drug treatment for the prevention of TB, also known as chemoprophylaxis, can reduce the risk of a first episode of active TB occurring in people with latent TB. The treatment of latent TB is being used as a tool to try and eliminate TB in the United States.
Isoniazid is one of the drugs used to prevent latent TB from progressing to active TB or TB disease. Isoniazid is a cheap drug, but in a similar way to the use of the BCG vaccine, it is mainly used to protect individuals rather than to interrupt transmission between adults. This is because children rarely have infectious TB, and it is hard to administer isoniazid on a large scale to adults who do not have any symptoms. Taking isoniazid daily for six months is difficult in respect of adherence, and as a result many individuals who could benefit from the treatment, stop taking the drug before the end of the six month period.

There have also been concerns about the possible impact of TB treatment for prevention programmes on the emergence of drug resistance. However, a review of the scientific evidence has now shown that there is no need for this to be a concern. The benefit of isoniazid preventative therapy for people living with HIV, and who have, or may have had latent TB, has also recently been emphasized.[3]

PREVENTING TB TRANSMISSION IN HOUSEHOLDS, MASKS

It is not fully known how differences between drug susceptible, and drug resistant TB, as well as HIV status, affect the risk of TB transmission. However it is thought that people with drug resistant TB remain infectious for much longer, even if treatment has been started, and this may prolong the risk of transmission in the household.

Face masks are different from respirators and can be made from either cloth or paper. A face mask worn by someone with infectious TB can help to prevent the spread of M. tuberculosis from the patient to other people. The face mask can capture large wet particles near the mouth and nose of the patient, preventing the bacteria from being released into the environment. Cloth masks can be sterilized and reused.

Respirators can protect health care workers from inhaling M. tuberculosis in certain circumstances, but they are expensive to purchase and they require specialized equipment to ensure that they fit properly. The use of a face mask does not protect health care workers against TB, and so a health care worker or other staff should not wear a face mask in a household (or indeed in a health care) setting.[4]

Households where someone has XDR TB

If someone has culture positive XDR TB, then they should be isolated at all times, and any person in contact with a culture positive XDR TB patient should wear a particulate respirator. If at all possible, HIV positive family members, or family members with strong clinical evidence of HIV infection, should not share a household with a culture positive XDR TB patient.

Physical measures for TB prevention

Before drug treatment for TB became available, removing TB patients from their homes and putting them in isolation in sanatoria, was the main way of reducing the transmission of TB.

However this policy changed in the vast majority of countries, after studies showed that if patients stayed at home and were treated on an "outpatient" basis, this did not increase the risk of TB among the household contacts of the people with TB. This is because drug treatment quickly makes a TB patient uninfectious, and most household contacts who do become infected, will have already become infected before the diagnosis of TB has been made.

So generally there is now no need for people to leave their homes because they have TB. The only exception to this is, as described above, when someone has infectious XDR TB, and it is not feasible to isolate them at home. Also people may still need to go into a health care facility because there are complications arising from their condition, or their treatment. Within a health care facility there may be a need for some separation of people in order to reduce the chances of transmission.

The measures described above also mainly apply to resource poor settings, and the recommendations can be different where more resources are available.

TB prevention in health care facilities

Doctors and other health care workers who provide care for patients for TB, must follow infection control procedures to ensure that TB infection is not passed from one person to another. Every country should have infection control guidance which clearly needs to take into account local facilities and resources, as well as the number of people being provided with care. However, infection control guidance must not only be written but also implemented.

Summary

Tuberculosis: General Information

What is TB?

Tuberculosis (TB) is a disease caused by germs that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine. A person with TB can die if they do not get treatment.

What Are the Symptoms of TB?

The general symptoms of TB disease include feelings of sickness or weakness, weight loss, fever, and night sweats. The symptoms of TB disease of the lungs also include coughing, chest pain, and the coughing up of blood. Symptoms of TB disease in other parts of the body depend on the area affected.

How is TB Spread?

TB germs are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. These germs can stay in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB germs can become infected; this is called latent TB infection.

What is the Difference Between Latent TB Infection and TB Disease?

People with *latent TB infection* have TB germs in their bodies, but they are not sick because the germs are not active. These people do not have symptoms of TB disease, and they cannot spread the germs to others. However, they may develop TB disease in the future. They are often prescribed treatment to prevent them from developing TB disease.

People with TB disease are sick from TB germs that are active, meaning that they are multiplying and destroying tissue in their body. They usually have symptoms of TB disease. People

with TB disease of the lungs or throat are capable of spreading germs to others. They are prescribed drugs that can treat TB disease.

What Should I Do If I Have Spent Time with Someone with Latent TB Infection?

A person with latent TB infection cannot spread germs to other people. You do not need to be tested if you have spent time with someone with latent TB infection. However, if you have spent time with someone with TB disease or someone with symptoms of TB, you should be tested.

What Should I Do if I Have Been Exposed to Someone with TB Disease?

People with TB disease are most likely to spread the germs to people they spend time with every day, such as family members or coworkers. **If you have been around someone who has TB disease, you should go to your doctor or your local health department for tests.**

How Do You Get Tested for TB?

There are two tests that can be used to help detect TB infection: a skin test or TB blood test. The Mantoux tuberculin skin test is performed by injecting a small amount of fluid (called tuberculin) into the skin in the lower part of the arm. A person given the tuberculin skin test must return within 48 to 72 hours to have a trained health care worker look for a reaction on the arm. The TB blood tests measure how the patient's immune system reacts to the germs that cause TB.

What Does a Positive Test for TB Infection Mean?

A positive test for TB infection only tells that a person has been infected with TB germs. It does not tell whether or not the person has progressed to TB disease. Other tests, such as a chest x-ray and a sample of sputum, are needed to see whether the person has TB disease.

What is Bacille Calmette–Guèrin (BCG)?

BCG is a vaccine for TB disease. BCG is used in many countries, but it is not generally recommended in the United States. BCG vaccination does not completely prevent people from getting TB. It may also cause a false positive tuberculin skin test. However, persons who have been vaccinated with BCG can be given a tuberculin skin test or TB blood test.

Why is Latent TB Infection Treated?

If you have latent TB infection but not TB disease, your doctor may want you to take a drug to kill the TB germs and prevent you from developing TB disease. The decision about taking treatment for latent infection will be based on your chances of developing TB disease. Some people are more likely than others to develop TB disease once they have TB infection. This includes people with HIV infection, people who were recently exposed to someone with TB disease, and people with certain medical conditions.

How is TB Disease Treated?

TB disease can be treated by taking several drugs for 6 to 12 months. It is very important that people who have TB disease finish the medicine, and take the drugs exactly as prescribed. If they stop taking the drugs too soon, they can become sick again; if they do not take the drugs correctly, the germs that are still alive may become resistant to those drugs. TB that is resistant to drugs is harder and more expensive to treat. In some situations, staff of the local health department meet regularly with patients who have TB to watch them take their medications. This is called directly observed therapy (DOT). DOT helps the patient complete treatment in the least amount of time.

Reference

1. https://www.cdc.gov/tb/publications/factsheets/general/tb.htm
2. Cover your cough, CDC, www.cdc.gov/flu/protect/covercough.htm
3. BCG vaccine, WHO, 2011, www.who.int/biologicals/areas/vaccines/
4. Tuberculosis Infection Control in the era of expanding HIV care and treatment, Geneva, WHO, 2007
5. www.who.int/tb/publications/2007/en

STRUCTURED KNOWLEDGE QUESTIONNAIRE

ON

TUBERCULOSIS INFECTION PREVENTION AND CONTROL

Code No:

SECTION A: DEMOGRAPHIC DATA:

Demographic Variables of patient with Tuberculosis	
Variable	**Distribution**
1.Age	a) ≤21 b) 21-25 c) 26-30 d) 31-35 e) ≥35
2. Sex	a) Male b) Female c) Transgender
3.Professional Qualification	a) Diploma b) Degree c) Post Graduation d) Doctorate e) Illiterate
4. Source of Information	a) mass media b) health centers and health care works c) family members d) other
5. Marital Status	a) Married b) Single
6.type of Tuberculosis	a) Primary T.B. b) MDR TB c) XDR TB d) latent T.B.

Section-B

Structured Knowledge Questionnaire

Instruction- The interviewer will ask following questions to the participant and tick (√) on response given by tuberculosis patients.

1. Tuberculosis means
    a. disease caused by the germs that is breathed into the brain
    b. disease caused by the germs that is breathed into the stomach
    c. disease caused by the germs that is breathed into the skin
    d. disease caused by the germs that is breathed into the lungs
2. Tuberculosis is caused by
    a. Mycobacterium tuberculosis
    b. Cynobacterium tuberculosis
    c. Bacterium tuberculosis
    d. Mycobacterium bacillus
3. Tubersulosis spread through
    a. Airborne route
    b. Speech route
    c. Water route
    d. Noise route
4. Tuberculosis infection means
    a. The person has the bacteria and have the symptoms of tuberculosis
    b. The person does not have the bacteria and have the symptoms of the tuberculosis
    c. The person has the bacteria but does not have the symptoms of tuberculosis

d. The person has does not have the bacteria and not having the symptoms of bacteria

5. Tuberculosis disease means
    a. A person infected with tuberculosis and does not show the symptoms of disease
    b. A person infected with cold and does not show any symptoms of the disease
    c. A person infected with tuberculosis and show the symptoms of disease
    d. A person infected with cold and show the symptoms of disease
6. The symptoms of tuberculosis is
    a. Sweating at night
    b. Loss of appetite
    c. Weight loss
    d. All of the above
7. A person with tuberculosis in lungs has
    a. Hungry for three weeks
    b. Sleeping more in the past three weeks
    c. Feel energetic in the past three weeks
    d. Persistent cough for the past three weeks
8. Tuberculosis is diagnosed by
    a. Sputum smear microscopy
    b. Chest X ray
    c. Acid fastness
    d. All the above
9. Tuberculosis can be spread by
    a. Infected person coughs
    b. Infected person sneezes

c. Spraying tuberculosis germs

d. All the above

10. The person with tuberculosis can avoid spreading tuberculosis by

a. Cover the hands while going outside

b. Cover the nose and mouth when coughing and sneezing

c. Cover the nose when sneezing

d. Cover the mouth while coughing

11. Tuberculosis infection control plan includes

a. Prompt recognition

b. Separation of patients affected with tuberculosis

c. Provision of health services

d. All the above

12. The first step of protocol in the infection control plan

a. Early recognition of patients suspected for tuberculosis

b. Direct care to patients

c. Registering the patients affected with tuberculosis

d. None of the above

13. The five action of infection control plan are

a. Screen, educates, separate, investigate for tuberculosis, treat

b. Screen, educates, separate, investigate for tuberculosis, monitor and evaluate

c. Screen, educates, separate, investigate for tuberculosis, monitor and treat

d. Screen, educates, review, investigate for tuberculosis, monitor and evaluate

14. Hygiene can be maintained by the patients by

a. Face mask can be used while coughing

b. Tissues can be used while coughing

c. Clean handkerchief can be used while coughing

d. Al the above

15. The person affected with tuberculosis and the non affected person should be

a. Separated from each other

b. Cared together

c. Share the belongings

d. Withdraw from social relationships

16. The patients can be educated for

a. Recognize symptoms of tuberculosis

b. Seek health care immediately once the symptom appears

c. Realise the symptoms and understand the need of treatment

d. All the above

17. The second line defence to prevent tuberculosis

a. Speech controls

b. Travel controls

c. Environmental controls

d. Diet control

18. The recommended control measures affordable for patients

a. Ventilation natural and mechanical

b. Ventilation mechanical

c. Filtration

d. Ultraviolet irradiation

19. Windows maintained in an open position will enhance

a. Filtration

b. Natural ventilation

c. Mechanical ventilation

d. Ultraviolet irradiation

20. Fans at home should be checked on a monthly basis for

a. Cleanliness

b. Working condition

c. Regulator speed verification

d. Pulling and pushing correct amount of air in right direction

21. Filtration enhances

a. Natural ventilation

b. Mechanical ventilation

c. Ultraviolet radiation

d. Ultra violet irradiation

22. Ultraviolet irradiation will

a. Only detect but not kill the bacteria

b. Detect and kill the bacteria

c. Find out the bacteria

d. Kill the bacteria

23. The adverse reaction of ultraviolet irradiation

a. Acute cutaneuos problems

b. Chronic cutaneous problems

c. Ocular changes

d. All the above

24. Natural ventilation includes

a. Concentrated air that enters and leaves the room

b. Noise enters and leaves the room

c. Fresh diluted air enters and leaves the room.

d. Water enters and leaves the room

25. The room is under less risk are

a. Open window

b. Open door

c. Fan

d. All the above

26. The patients who are having tuberculosis should avoid

a. Carbonated drinks

b. Alcohol in any form

c. Tobacco and tobacco products

d. All the above

27. The calorie dense rich food that is suitable for tuberculosis

a. Cereal porridge or keer

b. Eggs

c. Peanut

d. Soya beans

28. Minerals that need to be included in tuberculosis diet

a. Mushroom

b. Pumpkin seeds

c. Sesame

d. All the above

29. Tuberculosis can be treated by

a. Prescribed medication for six months

b. Prescribed medication for one year

c. Prescribed medication for a month

d. Prescribed medication throughout the life

30. A cause of tuberculosis treatment failure

a. Inappropriate guidelines

b. Non compliance with guidelines

c. Absence of guidelines

d. All the above

Answer keys

1.d	11.a	21.b
2.a	12.a	22.d
3.a	13.b	23.d
4.c	14.d	24.c
5.c	15.a	25.d
6.d	16.d	26.d
7.d	17.c	27.a
8.d	18.a	28.d
9.d	19.a	29.a
10.b	20.d	30.d

Attitude scale

Instructions: dear participants, your are requested to fill up the space with tick (√) mark for the appropriate option in each statement. Your detail will be kept confidential.

The responses for the statement interpreted as 4 for strongly agree, 3 for agree,2 for disagree, 1 for strongly disagree .

This part of questionnaire is to understand your opinions toward tuberculosis. There is no right or wrong answers. Please read it carefully, mark your answer which can describe your feeling in □. All items have only one answer. "1" means "Strongly disagree"; "2" means "disagree"; "3" means " agree"; "4" means "strongly agree".

S.n.	Statement	1	2	3	4
1.	I will take medication as prescribed by doctors and/or nurses	□	□	□	□
2.	I will visit doctor for further examination immediately if I have the symptoms of cough, sputum, poor appetite, weight loss, night sweating and coughing up of blood.	□	□	□	□
4.	In order to be healthy, I will read TB-related journal reports.	□	□	□	□
5.	I will pay attention to the condition of my lungs in order to find out whether I have TB or not.	□	□	□	□
3.	Chest x-ray test can find out TB early and to avoid lifting the potential burdens to the family.	□	□	□	□
6.	I will do chest x-ray test in the coming year.	□	□	□	□
7.	I will encourage my family members to take chest X-ray tests regularly.	□	□	□	□
8.	Everyone should actively educate friends and family members the methods of TB prevention.	□	□	□	□
9.	Everyone should understand knowledge of TB.	□	□	□	□
10.	Everyone should take the responsibility to prevent TB.	□	□	□	□
11.	Every family should keep good air circulation and sufficient sunshine indoor.	□	□	□	□
12.	I will encourage him/her to receive medical treatment continuously if my family members are diagnosed with TB.	□	□	□	□

13.	I am worried that I may be infected if my family member has TB.	□	□	□	□
14.	I am worried other people may know his/her conditions if my family member has TB.	□	□	□	□
15.	I am worried that other people may laugh at me if I have TB.	□	□	□	□
16.	I am worried that the medical fee will cause lots of economic burdens to my family if I have TB.	□	□	□	□
17.	If I am diagnosed with TB, I am worried that the symptoms will disturb my daily life if I am diagnosed with TB.	□	□	□	□
18.	I have fears when thinking about TB.	□	□	□	□
19.	TB is a serious infectious disease.	□	□	□	□
20.	TB cannot be completely cured.	□	□	□	□

PRACTICE SCALE

Sl.N.	Statement	Always (2)	Sometimes (1)	Never (0)
1.	Do you swallowing and tolerating the TB medicine?	o	o	o
2.	Do you smoke	o	o	o
3.	Do you have access to food to take with medicine?	o	o	o
4.	Did you disclosed your TB status to household members?	o	o	o
5.	Have any other household members been coughing?	o	o	o
6.	Did any household member scanned for TB	o	o	o
7.	Do you maintain good cough hygiene?	o	o	o
8.	Do you know how to safely dispose of sputum?	o	o	o
9.	Do you know TB can not be spread through utensils	o	o	o
10.	Do you think that TB is treatable disease	o	o	o